Applicant : William E. Bogan   Attorney's Docket No.: 15786-006001 / P032-130068
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Amendments to the Claims:

This listing of claims replaces all prior versions and listings of claims in the application:

Listing of Claims:

1.   (Currently Amended) A method comprising:

receiving an assembly of components, where a first component moves relative to a second component;

receiving a selection of a center of motion for the first component for an assembly of computer aided design (CAD) models of a mechanical design;

receiving a selection of a the first component of the assembly associated with the selected center of motion, where the motion of the first component relative to the second component is defined by reference to the center of motion;

determining a range of motion for the first component;

receiving a selection of an origin for a grid pattern;

automatically generating the grid pattern based upon the determined range of motion; and

automatically displaying the grid pattern at the selected origin.

2.   (Currently Amended) The method of claim 1 further comprising:

determining if the range of motion associated with the first component has been modified; and

adjusting the grid pattern to ensure that the displayed range of motion of the first component is within limits of the grid pattern.

3.   (Original) The method of claim 1 further comprising:

receiving an indication of a change in location of the origin of the grid pattern to a new location; and

displaying a grid pattern with its origin at the new location.

4.   (Original) The method of claim 1 further comprising:

receiving a selection of an alternate component associated with the selected center of

motion;

determining a range of motion for the alternate component based upon the selected center

of motion; and

automatically adjusting the grid pattern to ensure that the range of motion for the

alternate component is displayed within limits of the grid pattern.

5.   (Currently Amended) The method of claim 1, wherein receiving the selection of the

origin of comprises receiving at least one of a cursor selection, coordinate location, centroid of

the geometry piece, [[and]]or an entity proximity.

6.   (Original) The method of claim 1, wherein determining the range of motion comprises

retrieving pre-stored constraints for the component.

7.   (Original) The method of claim 1, wherein automatically generating comprises

automatically generating a grid pattern based at least upon one or more user inputs.

8.   (Original) The method of claim 1, wherein automatically displaying comprises displaying

a grid pattern having one or more ranges of motion.

9.   (Currently Amended) The method of claim 1, wherein automatically displaying

comprises displaying at least one of a scale [[and]]or an indicator.

10.   (Original) The method of claim 1 further comprising determining engineering design

information based at least upon the determined range of motion.

11.   (Currently Amended) A method comprising:

receiving an assembly of components, where a component moves relative to one or more

other components;

receiving a selection of [[a]] the component ~~of an assembly of computer aided design~~ ~~(CAD) models of a mechanical design,~~ where the component is associated with one or more constraints that define a relationship of the component to one or more other components of the assembly;

determining a range of motion for the component based on the one or more constraints; and

automatically displaying a grid pattern based upon the determined range of motion for the component.

12.   (Currently Amended) The method of claim 11, wherein the receiving a selection of a component step comprises receiving a selection of a component associated with a center of motion of the component ~~assembly~~.

13.   (Original) The method of claim 11, wherein automatically displaying comprises automatically displaying a grid pattern at a received selection of an origin for the grid pattern.

14.   (Currently Amended) ~~An article comprising a machine accessible medium having~~ ~~instructions encoded therein, said instructions, which when executed by a machine,~~ A computer program product, tangibly stored on a computer-readable medium, comprising instructions operable to cause a programmable processor to:

receive an assembly of components, where a first component moves relative to a second component;

receive a selection of a center of motion for the first component; ~~for an assembly of~~ ~~computer aided design (CAD) models of a mechanical design,~~

receive a selection of [[a]] the first component of the assembly associated with the selected center of motion, where the motion of the first component relative to the second component is defined by reference to the center of motion;

determine a range of motion for the first component;[[,]]

receive a selection of an origin for a grid pattern;[[,]]

automatically generate the grid pattern based upon the determined range of motion;[[,]]

and

automatically display the grid pattern at the selected origin.

15. (Currently Amended) The ~~article~~computer program product of claim 14, wherein the ~~executing~~ instructions are further operable to determine if the range of motion associated with the first component has been modified, and adjust the grid pattern to ensure that the displayed range of motion of the first component is within limits of the grid pattern.

16. (Currently Amended) The ~~article~~computer program product of claim 14, wherein the ~~executing~~ instructions are further operable to receive an indication of a change in location of the origin of the grid pattern to a new location, and ~~displaying~~ display a grid pattern with its origin at the new location.

17. (Currently Amended) The ~~article~~computer program product of claim 14, wherein the ~~executing~~ instructions are further operable to receive a selection of an alternate component associated with the selected center of motion, determine a range of motion for the alternate component based upon the selected center of motion, and automatically adjust the grid pattern to ensure that the range of motion for the alternate component is displayed within limits of the grid pattern.

18. (Currently Amended) The ~~article~~computer program product of claim 14, wherein the ~~executing~~ instructions are further operable to receive at least one of a cursor selection, coordinate location, centroid of the geometry piece, [[and]]or an entity proximity.

19. (Currently Amended) The ~~article~~computer program product of claim 14, wherein the ~~executing~~ instructions are further operable to retrieve pre-stored constraints for the component.

20. (Currently Amended) The ~~article~~computer program product of claim 14, wherein the ~~executing~~ instructions are further operable to automatically generate a grid pattern based at least upon one or more user inputs.

21.   (Currently Amended) The ~~article~~computer program product of claim 14, wherein the ~~executing~~ instructions are further operable to display a grid pattern having one or more ranges of motion.

22.   (Currently Amended) The ~~article~~computer program product of claim 14, wherein the ~~executing~~ instructions are further operable to display at least one of a scale [[and]]or an indicator.

23.   (Currently Amended) The ~~article~~computer program product of claim 14, wherein the ~~executing~~ instructions are further operable to further determine engineering design information based at least upon the determined range of motion.

24.   (Currently Amended) ~~An article comprising a machine accessible medium having instructions encoded therein, said instructions, which when executed by a machine,~~ A computer program product, tangibly stored on a computer-readable medium, comprising instructions operable to cause a programmable processor to:

receive an assembly of components, where a component moves relative to one or more other components;

receive a selection of [[a]] the component, where the component is associated with one or more constraints that define a relationship of the component to one or more other components of the assembly; ~~of an assembly of computer aided design (CAD) models of a mechanical design,~~

determine a range of motion for the component based on the one or more constraints;[[,]] and

automatically display a grid pattern based upon the determined range of motion for the component.

25.   (Currently Amended) The ~~article~~computer program product of claim 24, wherein the ~~executing~~ instructions operable to receive a selection of a component are operable to receive a selection of a component associated with a center of motion of the component ~~assembly~~.

26.   (Currently Amended) The ~~article~~computer program product of claim 24, wherein the ~~executing~~ instructions are further operable to automatically display a grid pattern at a received selection of an origin for the grid pattern.

27.   (Currently Amended) An apparatus comprising:

a processor; and

a ~~machine accessible medium having instructions encoded therein, said instructions, which when executed by said processor,~~ computer program product, tangibly stored on a computer-readable medium, comprising instructions operable to cause a programmable processor to:

receive an assembly of components, where a first component moves relative to a second component;

~~receives~~ receive a selection of a center of motion for the first component; ~~for an assembly of computer aided design (CAD) models of a mechanical design,~~

~~receives~~receive a selection of [[a]]the first component of the assembly associated with the selected center of motion, where the motion of the first component relative to the second component is defined by reference to the center of motion;

~~determines~~determine a range of motion for the first component[[,]];

~~receives~~receive a selection of an origin for a grid pattern[[,]];

automatically ~~generates~~generate the grid pattern based upon the determined range of motion[[,]]; and

automatically display the grid pattern at the selected origin.

28.   (Currently Amended) An apparatus comprising:

a processor; and

a ~~machine accessible medium having instructions encoded therein, said instructions, which when executed by said processor,~~computer program product, tangibly stored on a computer-readable medium, comprising instructions operable to cause a programmable processor to:

receive an assembly of components, where a component moves relative to one or more

other components;

~~receives~~receive a selection of [[a]] the component, where the component is associated with one or more constraints that define a position of the component relative to one or more other components of the assembly; ~~of an assembly of computer-aided design (CAD) models of a mechanical design,~~

~~determines~~determine a range of motion for the component based on the one or more constraints;[[,]] and

automatically displays a grid pattern based upon the determined range of motion for the component.

29.   (New) The method of claim 1, wherein:

the first component is associated with one or more constraints that define a position of the first component relative to the second component; and

the determining a range of motion step comprises determining a range of motion based on the one or more constraints.

30.   (New) The computer program product of claim 14, wherein:

the first component is associated with one or more constraints that define a position of the first component relative to the second component; and

instructions operable to determine a range of motion step comprises instructions operable to determine a range of motion based on the one or more constraints.

31.   (New) The computer program product of the apparatus of claim 27, wherein:

the first component is associated with one or more constraints that define a position of the first component relative to the second component; and

instructions operable to determine a range of motion step comprises instructions operable to determine a range of motion based on the one or more constraints.

32.   (New) The method of claim 11, wherein the one or more constraints include at least one constraint defining a position of the component relative to one or more other components of the assembly.

33.   (New) The method of claim 11, wherein the one or more constraints include at least one constraint defining motion of the component relative to one or more other components of the assembly.

34.   (New) The computer program product of claim 24, wherein the one or more constraints include at least one constraint defining a position of the component relative to one or more other components of the assembly.

35.   (New) The computer program product of the apparatus of claim 28, wherein the one or more constraints include at least one constraint defining a position of the component relative to one or more other components of the assembly.